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Ans to the Qus NO: 01 (a)

Ans: System Design:

System Design is the core concept behind the design of any distributed systems. System Design is defined as a process of creating an architecture for different components, interfaces, and Modules of the system and provid corresponding data helpful in implementing su element in System.

The main focus of system analysis is on under-standing the problem domain and defining wh the system should do without specifying how it will be done.

Key Activities in System Analysis:

* Understanding business requirements.
* Identifying problems and opportunities.
* Analyzing existing systems and process.
* Gathering and documenting requirements.
* ~~Gr~~ Creating use cases, data flow diagrams. and entity-relationship diagrams.
* Defining system objectives and Constaints.

System Design:

system design, on the other hand, is the phase in the systems development life cycle where the detailed specifications of the system components are created. It takes the output from the system analysis and transforms it into a detailed design that can be implemented. System design focuses on how the system will be built. It involves designing the architecture, components, modules, interface, and data for the system.

key activities in System Design:

* Creating system architecture and high level design.
* Defining System Components and modules.
* Designing user interfaces and interactions.
* Defining data structure and databases.
* specifying system interfaces with other systems.
* Selecting appropriate technologies and tools.
* Creating detailed technical specifications.

Ans to the Qus NO: 02(a)

Ans: System:

The Greek word "systema" is the origin of the world "system" system is a group of resources which work collectively in order to produce desired output from given inputs. It receives input and produces the output. The components of the systems are interconnected and work together to acheive a common objective.

Types of System:

physical or Abstract:

physical system is tangible entities that maybe static or dynamic in nature. Abstract system is conceptual or non-physical. The abstract is conceptualization of physical situations.

open and closed:

An open system continually interacts with it environment. It receives input from the outsi and delivers output to outside. A closed system is isolated from environment influences.

Sub system and Super System:

Each system is part of a Large System. The business from is viewed as the system or total system when focus is on production, distribution of goal and sources of profit and income.

permanent and Temporary System:

A permanent system is a system enduring for a time span that is long relative to the operation of human. Temporary system is one having a short time span.

Natural and Man Made System:

System which is made by man is called man made System. Systems which are in the environment made by nature are called natural System.

Determine and probabilistic:

A Deterministic system is one in which the occurance of all events is perfectly predictable.

Man-made Information System:

It is generally believed that the information reduces uncertainty about a state or event. An information system is the basis for interaction between the user and the analyst. It determines the nature of relationship among decision makers

System Models:

System models are abstract reprentations an conceptual frameworks used to describe and analyze complex systems. These models help in understanding, designing and managing systems by providing a simplified and organized view of their structure, behaviour, interactions, and functions. Various types of system models are used in different fields, including engineering, computere science, business, and social sciences, to address specific aspects of systems. Here are some common types of systems models:

① Mathmatical Models:

Mathematical equations and formulas are used to represent the relationships and behavious within a system. These models are often used for quantitative analysis and Simulations.

② Physical Models:

physical Models or prototypes are built to represent the system's components and their interactions. These models are particularly useful in engineering and product design.

③ Graphical Models:

Graphical representations, such as flowcharts, block diagrams, and Network diagrams, are used to illustrate the flow of information, processes, and relationships within a system. These models are often used in software engineering and process analysis.

④ Simulation Models:

Simulation models use computer software to imitate the behavior of a real system over time.

⑤ State-Based Models:

State-based models describe the different states a system can be in and the transitions between these states. finite state machines and state transition diagrams are examples of state-based models used in computer science and control systems.

⑥ Data Models:

Data models define the structure and organization of data within a system.

System models serve as valuable tools for understanding the complexities of real-world systems, making predictions, optimizing processes.

Ans to the Qus NO: 03

Ans: Definition of Data flow Diagram (DFD) Elemen

① Processes (Rectangles):

Processes represent activities or transformations within the system. They can be as simple as data input or output or more complex operations. Eo process receives input data, processes it, and proe output data.

② Data stores (Parallel lines):

Data stores represent where data is stored withi the system. They can represent databases, files or any other stores methods. Data stores are used to show the persistance of data & across processes.

③ Data flows (Arrows):

Data flows represent the movement of data betw process, data stores, and external entities, They iddicate the direction in which data is flowing within the system

④ External Entities (Squares or Rectangles):

External entities are sources or destinations o data that interact with the system but are not part of the system itself.

Types of Data flow Diagrams (DFD):

① Level of 0 DFD: (context Diagram):

This represents the entire system as a single process. It shows how the system interacts with external entities and illustractes the scope of the system. The context diagram provides a high-level view of the system without going into going into detail about internal processes.

② Level 1 DFD:

This reppesents the entire system as a single process. It shows how the system interacts with external entities and illustrates the scope of the system. The context diagram provides a high-level view of the system. without going into areas.

③ Level 2 DFD and Beyond:

Further levels of DFD provide more detailed break-downs of the processes in Lelel-1. for example; a Level 2 DFD for a speeific subprocess in level 1 would break down subprocess into more detailed process. data flows, and data stores. This hierarchical approach can continue to more detailed levels as necessary.

DFD are valuable tools for visualizing and understanding the flow of data within a system making them essential in systems analysis and design processes. They help in indentifying data sources, data destinations, data stroage locations, and process that transform the data.

Different levels of DFD's provide varying levels of detail, allowing analysis to focus on specific parts of the system while maintaining an overall view of the entire system.

Ans to the Qus No: 04

Ans: Bottom-Up Development Strategy:

Advantages:

① Early Deliveries:

Modules can be developed indenpendently, allowing for partial implementions and early deliveries of functional components.

② Incremental Development:

Enables incremental development, where small manageable parts of the system are built and tested individually before being integrated into the larger system.

③ Focused Testing:

Each module can be tested in isolation, allowing for focused and thorough testing of individual Components.

④ Flexibility:

Provides flexibility in incorporating changes or update to specific modules without affecting the entire System, making it easier to adapt to evolving requirements

Disadvantages:

① Integration Complexity:

Integrating independently developed modules can be complex and may require significant effort to ensure they work seamlessly together.

② Overlapping functionality:

Without proper co-ordination, there might be overlapping functionality or conflicts between modules, leading to system inconsistencies.

③ Dependency Management:

Managing dependencies between modules can be challenging especially if changes in one module affect others, leading to potential conflicts.

④ Testing Overhead:

While individual modules can be tested independently extensive integration testing is necessary to ensure the compatibility and correctness of the integrated system.

Objectives of Using Structural flowchart:

Structual flowcharts are graphical representation of a system's processes and the flow of data between them. The objectives of using structural flowchart includes:

① Visualization:

They provide a visual representation of the systems structure, making it easier for stakeholders to understand complex processes and relationships.

② Analysis:

Structural flowcharts allow for the analysis of system components.

③ Design:

They aid in designing the system architecture by breaking down the system into smaller.

④ Communications:

Structural flowcharts serve as a communication tool between various stakeholders, such as develope